

# THE SCIENCE OF FARMING

## Questions of the Feed Lot

Professor Herbert W. Mumford  
Illinois College of Agriculture

### Timothy Poor for Cattle

I HAVE twenty steers 2 years old this spring. They are fed all the timothy hay they will eat and are getting two pounds of cottonseed meal per day. I am advised to increase the cottonseed meal until they get five pounds per day, and then sell them about May 1. Present weight is about 600 pounds. Also how will these steers do on grass thirty or forty-five or sixty days after May 1, with about five pounds of cottonseed meal when they have been fed as above since Jan. 20? About how much gain can I expect from 100 pounds of cottonseed meal? Give comparison of gain in cottonseed meal, oilmeal and corn for various feedings, especially for fattening steers.

Timothy hay is very poor roughage for cattle. If it is of good quality and you could sell it at a good price and secure choice clover hay in its stead, it would probably pay you to make the exchange. If you are anticipating selling your cattle May 1 you are feeding them too large a proportion of roughage and too small a proportion of concentrates. I believe it would pay you to increase the amount of concentrates. I would suggest starting in with feeding one or two pounds of corn per steer per day in addition to the present feed of cottonseed meal, increasing this amount gradually until you are feeding at least six pounds per steer per day; then begin and increase the cottonseed meal from two pounds per steer per day to about four pounds, providing you continue to feed timothy hay. If you should change to clover hay, then three pounds of cottonseed meal per steer per day would be enough. The ration which I am suggesting is not a heavy ration by any means, but will help considerably to flesh up your cattle. I would think that with this ration it would pay you to turn the cattle onto grass for, say, forty to fifty days, providing it is good, continuing to feed all of the grain they will eat. It certainly should pay if you do not increase present ration. I cannot answer your question as to what gain you ought to expect from a hundred pounds of oilmeal and a hundred pounds of cottonseed meal, as it would not do to feed either of these feeds heavily as the sole concentrated part of the ration. From corn alone you should get from six and one-half to eight pounds of gain per bushel of corn fed whole; clover hay is used as the roughage. If, on the other hand, you were depending upon timothy hay for roughage, you would doubtless not secure over five to six and one-half pounds of beef per bushel of corn fed. Of course, the amount produced per bushel of corn fed will depend to a considerable extent upon the proportion of hay to corn. If you feed a large amount of roughage then more of the gain is secured from roughage.

### Land Wears Out

THE profitable production of any crop continuously on the same area is impossible. Sooner or later the yield will reach a point where the fixed charges will equal the value of the crop produced. When that time comes agriculture is no longer profitable. At the great Rothamsted experiment station a continuous production of wheat on the same land for a half century resulted in an average of 13.1 bushels per acre. This yield was too small to pay the cost of production and the fixed charges on the land and then comes a profit. On the same kind of land the annual application of farmyard manure resulted in an average yield of 35.7 bushels of wheat per acre for a period of fifty-one years.

## Tobacco the Most Profitable Weed

By Professor J. N. Harper

Director South Carolina Agricultural Experiment Station



A Good Specimen of Rounded Type of Tobacco Leaves

In most kinds of seeds there is a sufficient supply of all the ten elements of plant food to feed the young plant until it sends out roots and leaves and is able to take nourishment from the soil. Tobacco has very little reserve supply of food in the seed and the seedling must "hustle" for itself almost immediately after germination. This accounts for the slow initial growth of the plant and the rapid development after the third and fourth leaves have formed. Do not force tobacco seedlings too much at the start. Tobacco is a rank feeder on potassium, which is best supplied combined as a sulphate, as chlorine abundant in potassium chloride is injurious.

This will also put the soil in good physical condition. The bed should be protected by being surrounded by boards and the upper side should be ditched to prevent water from flooding it. The bed should also be protected in the early spring by cotton canvas. The seed should be sown after the bed has been burned and plowed and thoroughly raked and has been rid of all stones and trash. The seed should be sown at the rate of one thimbleful to every 35 square feet. Before sowing the seed the light ones should be separated from the heavy ones and only the heavy ones should be sown. This can be done by a recently invented apparatus which blows the light or chaffy ones out in a broad glass jar and keeps moist in a dark warm place. In a few days all good seed will germinate. The seed should be sown early in the spring and raked in. The young tobacco plants should be heavily

fertilized with nitrates and potash salts and should be transplanted when the leaves are a little larger than a silver dollar. The earlier the tobacco is set out the better the quality and the greater the yield. Transplanting is usually done by hand, and when thus transplanted the settler should be careful that the hole is made deep enough to allow the roots of the plantlet to be perfectly straight down, otherwise a disease will set up that will greatly injure the plant. Machines are now being used to a considerable extent, and with their aid tobacco can be set out in dry weather and a good stand obtained. It is necessary to water the young plants when they are set out during dry weather.

No plant is so affected by different types of soils as is the tobacco plant. The variety of the tobacco grown in a given locality depends upon the type of soil in that locality. The texture of the soil seems to influence the character and quality of the tobacco more than does its chemical composition. Under given climatic conditions the class and type of tobacco depend upon the character of the soil upon which it is grown, especially on the physical properties, while the grade is determined largely upon the cultivation and curing of the crop. If the texture of the soil is known it is possible to say what type of tobacco is suited for that soil. Before the tobacco is set out the soil should be thoroughly prepared by deep plowing, rolling

and harrowing, and the rows should be laid off at a uniform distance with a marker. If soil land is to be planted in tobacco it should be plowed early in the spring to give the soil time to thoroughly rot.

There is no plant that is so susceptible to fertilization as is tobacco. Its quality is greatly affected by fertilizers. It is a plant that requires large amounts of potassium and nitrogen. The potassium should be in the form of a sulphate, as the chlorides are detrimental to its quality. Phosphorus increases the yield on most types of soils, but has no effect on the quality of the tobacco. Tobacco cannot be grown for a number of years on the same soil, therefore it must be in a system of rotation with other crops. In the blue grass region of Kentucky, where White Burley is grown entirely, it enters a rotation with corn, wheat, clover, timothy and blue grass, the fields remaining in blue grass for a long term of years. In other parts of the country where a number of other varieties are grown it is rotated with corn, wheat and clover. Coarse and heavy manures are detrimental to the quality of the tobacco unless they are well rotted. Tobacco stems are an excellent fertilizer for tobacco, and as much as 1,500 to 2,000 pounds can be used to the acre.

Tobacco should be planted in rows, varying from a distance of 3 to 4 1/2 feet, depending upon the variety, and the distance between the plants are set in the rows also depending upon the variety. Some varieties, as the White Burley, are set 15 to 20 inches, while others, as Yellow Prior, are set 3 1/2 feet.

The cultivation should be clean and shallow. The plants should be topped when they first begin to bloom. The number of leaves left varies from sixteen to twenty-four, depending upon the variety. All suckers should be pulled off before they get to be six inches long. Tobacco should never be cut before it is thoroughly ripe. This is indicated by the color of the tobacco. It begins to turn yellow on ripening. The whole plants are either cut down with small knives made for the purpose or the ripe leaves are picked, leaving the others to ripen. The cigar-tobacco types are primed, whereas the heavy tobaccos and White Burleys are cut whole and placed on sticks. An hour or so after tobacco has been cut and placed on sticks it should be put on trestles in the field to prevent sunburn. It is best to leave on the trestles for a day or two before hauling to barn. Tobacco that is placed on sticks should always be hauled to the barn on tobacco frames rather than in bulk on an open wagon body.

Where the soil texture and other conditions are favorable for the growth of tobacco it can be grown successfully even where the weather conditions are not favorable for it by being grown under canvas. Nearly all of the types of tobacco grown in the United States have been experimented with by this method. By growing tobacco under shade it will resist a drought, the soil retains the moisture, a very much larger yield is produced and the leaves are of a finer quality. Under shade the tobacco is less subject to insect depredations are prevented, considerable labor is saved in cultivation and the physical condition of the soil is greatly improved. Sunburn, injury due to heavy winds, frosts and rains and injury from early and late frosts are also prevented. Undesirable cross pollination is lessened to a certain extent, the seasons are considerably prolonged, and few of the plants have to be reset, while the southern varieties can be grown farther north. It is questionable, however, whether it pays because of the great expense.

## Answers by the Veterinarian

Dr. A. S. Alexander  
Wisconsin College of Agriculture

### Hgroma

A BIG, soft bunch came upon the left knee of one of my cows and I cut it open and let out a lot of watery stuff. Shall I cut it open now and then to let this fluid escape? She is not lame on it, but I want to cure it up as soon as possible.—H. J. T., Wisconsin.

Reply.—There is a serious cyst filled with fluid and the cause is bruising upon an inadequately bedded stall floor, or upon the manger. The popular farm method of treating such cysts is to run a tape seton (rowel) down through the sac and pull the tape back and forward through the wounds twice daily to make the fluid run out. The veterinarian operates by cutting open the sac, removing clots and breaking down adhesions. Then he syringes and swabs the interior of the cavity with tincture of iodine, packs it full of calcium saturated in an antiseptic solution and renews the dressing once daily until the sac closes and the wound heals. Usually a horny growth remains about the wound, despite the best of treatment. Apart from the blemish the sac does little if any harm and seldom is associated with lameness.

### Sterility

I HAVE three cows and a heifer that have been dry many times but they fail to get with calf. They have no disease discharge and we have not had contagious abortion in the herd of dairy cows to which these animals belong. Is there anything we can do that may cause them to conceive? We can try another bull, as a neighbor has recently bought one. The animals are not too fat and have been well fed and cared for.—B. H., Ohio.

Reply.—Three times a week inject into the vagina of each cow half a gallon of lukewarm water containing half an ounce of pure phosphate of soda, which should be kept tightly covered in a mason fruit jar to prevent chemical changes from exposure to the air. When a cow comes in heat have mouth of her womb opened by an expert and at once inject into vagina (not into the womb) the same solution as before and have her bred an hour or so after the injection. If she comes in heat again continue the treatment with soda solution, but do not again open mouth of womb. Let cows run outdoors as much as possible. Breed to a young, vigorous bull.

### A Suspicious Case

A MARE that has been running with other horses and that we bought last fall has suddenly had a hind leg swell up, and it has broken out in three or four places about the ankle and knee joint. I also find a lot of bunches on the leg, on inside surface, and I guess some of them are going to burst. What runs from the sores is bloody and puslike, but the sores don't seem to heal up. She was lame, but is not so bad now. Her hair is coarse and she is not in good shape considering the feed I have given her.—Reader.

Reply.—When any farmer has a case like this he should at once notify the state veterinarian or his deputy. If he cannot have a local graduate veterinarian make an examination, Farcy, which is the skin form of that terrible disease known as glanders, is almost certainly indicated by such symptoms, and it is an incurable malady, fearfully contagious, fatal and communicable and fatal to man. The horse should be isolated and any stable it has occupied should be disinfected and whitewashed after a thorough cleaning. No treatment should be given. The veterinarian should be called in as soon as possible.

## A COLLECTION OF USEFUL INFORMATION

### Garden Notes

THE Early Cluster cucumber is said to be a good variety for supplying early pickles.

Garden crops use fertility near the surface. Do not plow under manure too deep.

The garden can supply many things now purchased at the store in meats.

Cut out all dead and sickly canes in the blackberry patch.

Damp cellars are good for growing mushrooms. Large cities supply a market.

Wichita (Kan.) gardeners and orchardists tried to keep San Jose scale inspectors off their grounds, but were defeated in court when they tried to obtain an injunction for that purpose. Some people have to be forced to let others take care of their interests.

A convict in a Minnesota prison is said to have grafted a lemon on a grape fruit and obtained a fruit with a "taste" peculiar to lemons and weighing about three pounds.



SOME BIG CARBAGES

All plants need ten different, specific substances for use as food. Nitrogen is one of the elements and is used most in the production of foliage. Since development of leaves is most important in case of cabbage, nitrogen is especially important in the production of that crop. Sodium nitrate, legumes, liquid manure and cotton seed meal are rich in nitrogen.

Wart disease, an importation from Europe, threatens the potatoes of the United States. Monster warts make the potatoes affected unsalable.

Plant strawberries. No small fruit is adapted to a greater variety of soils and climatic conditions. What other berry is more delicious?

Sulphide of arsenic is a new insecticide which does not hurt foliage and kills the codling moth as well as Bordeaux mixture, the standard spray mixture.

Vegetables can be grown on nearly any kind of soil. All that is needed is plenty of organic matter and careful cultivation.

### Farm Work Horses

IF THOSE who have horses in their charge on the farm would inaugurate a more systematic course of feeding, utilizing the cheaper forms of feed, much expense of winter feeding could be saved, and better and healthier horses would be the result. Adopt, for instance, the plan of feeding the horses in the morning only a stomach full of the feed, a stomach full at noon and only a stomach full at night. Such a course would give the horse's stomach a chance to digest the feed.

A variety of feed is at hand, then feed one kind in the morning, another at noon and another at night. Regularity in feeding is important. If horses are watered frequently enough, they will not drink too much at a time. Regular exercise in the open air is absolutely necessary to maintain a healthy condition. Spasmodic exercising alternating with periods of inactivity is dangerous and unprofitable. The proper use of the means at command on the farm will insure a good condition of the horses that will look well, be well, and give excellent service.—N. A. Clapp.

### Points to Note in Brood Sow

IN BUYING a brood sow it is well to note the following points:

A sow with a good digestion must not only supply the pigs with all they demand at the start, but produce pigs that will take on fat when they are being prepared for market.

A sow's disposition should also be observed. If she is vicious, nervous and disposed to fight the other animals in the pen on slight provocation she will not make a good mother. She may be improved in this respect by care, but the right way is to breed for good disposition.

A nervous sow is not a good flesh producer and her progeny will carry this failing as well.

A vicious sow is more likely to destroy her own pigs than one with a gentle disposition, and this is a very important matter to consider. While it is true a hog is simply a flesh-producing machine, yet the nervous condition is as much to be considered as any other point.

### The Farm Wood Lot

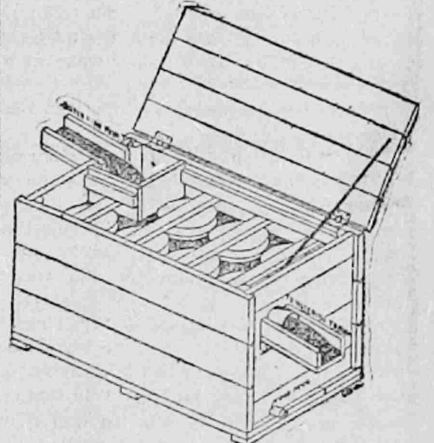
THE American farmer should give more thought and study to conserving the last remaining supply of timber. There are hundreds of generations yet to come, and each will want timber to build a home and keep what has already been built in good repair. Practically every farm has a small wood lot yet. This timber area is fast being cleared and unless more attention is paid to its conservation in the future the supply will become totally exhausted. How best to manage the present farm wood lots to conserve the young growing timber is a vital question. There are trees in wood lots fully matured and it would be better for the future of the stock if it were removed. If care is exercised in felling trees the work of removing the matured crop can be accomplished without great injury to the young trees. Where there are open places in the wood lot caused from the removal of matured timber some quick growing young stuff should be planted in the space made and prevent winds from sweeping through and injuring the larger trees.

### Live Stock Pays in Long Run

INTELLIGENT systems of live stock husbandry are the most profitable systems of farming under conditions likely to prevail for a long series of years, doubtless indefinitely. Then, too, in considering a question of such significance only averages extending over a series of years equally favorable to grain growing on the one hand and live stock production on the other should be considered. In these comparisons live stock production is likely to lose much in light of the fact that our crops are produced by men who are primarily successful grain growers, involving relatively simple operations, and who are more or less inclined in their knowledge of successful live stock management, which presents numerous complicated and involved processes. Because systems of successful live stock production present not only more, but also more complicated problems than systems of grain growing, adequate provision should be made for the investigation of these problems, and the wide dissemination of the results of these investigations.—Professor Herbert Mumford.

### For Keeping Cream Cool

A BOX, such as is shown in cut, will easily and efficiently solve the problem of keeping hand separator cream in the best possible condition. This should be placed between the stock tank and the well, so that all water that goes to the stock tank must pass through the cream box. The tall, narrow, shot-gun can, which is about eight inches in diameter and twenty inches high, is to be recommended for this purpose, as cooling will take place much more rapidly in such a can. The cover of this can is very close fitting and, therefore, should not be placed upon the can until the contents have had a chance to cool and the animal heat and gases found in fresh cream have passed off. By stirring the cream, cooling will take place much more rapidly and the gases will be more quickly removed. This box can be constructed of tongue and grooved yellow pine one and one-half inches in thickness. A little cotton and white lead should be



placed in all joints before the boards are fastened together, as this will do away with any possibility of leaking after the box has once become water soaked. This should also be placed on the flat sides of the one-quarter round pieces before they are nailed in the corners. This may also be constructed of cement. The size of this box will depend on your supply of cream. Note the arrangement which provides for the can being held down in the water, though it may contain only a small amount of cream. For those who have ice this should be modified. It would then not be advisable to run the water through the box, as this would cause a waste of ice. Merely place ice in the water around the cans. In either case the box should be well covered. With this arrangement each separation of cream should be placed in a different can, at least until the fresh cream has become cooled to as low a temperature as is possible.

## The Farm Water Supply

By R. S. Stebensen

THE subject about to be discussed is one of the most important, and I may say one of the most neglected, on many farms of our farms. To those of us who value our own health and that of our families, to those who would have strong and healthy animals, and, above all, who would have a supply of pure and wholesome milk, I would say that without having drinking water of the purest kind none of these blessings can be enjoyed. Although people might use unwholesome water for some time without apparently any bad effects, still as soon as the conditions were right, disease, most likely typhoid or dysentery, will break out. It is well known that the first mentioned disease is most frequently contracted from drinking water or milk in which the bacillus of typhoid exists. Milk is one of the most common sources of infection; it therefore becomes necessary to supply our cows with good wholesome water, otherwise low can expect them to produce any milk at all. In fact, it is criminal to allow dairy cows, especially those producing milk for consumption in our cities and towns, to drink from filthy, stagnant, scum-covered pools that are reeking with disease germs. We have all seen this condition in the internal economy of the cow to eliminate the disease germs that she is often forced to swallow in her drinking water.

In places people are blessed with water of the greatest purity, but unfortunately from the location of many farm wells the water, though naturally pure and wholesome, has become contaminated, in most instances by the drainage from the farmyard or house. It has been the common practice to locate the well where it will be most convenient, and this is a very important matter to consider. Now if a well is placed in or near a barnyard it is only a question of time before it will become polluted, such time depending upon the nature of the soil to a great extent. A well in which a sudden rise of water takes place after a rain should be regarded with the greatest suspicion, as there are only two causes to which we can attribute the sudden rise: either the surface water has run in over the top or else it has passed very rapidly down through the soil, both equally bad if surrounding suspicion, as there are not what they should be.

For a number of years an experiment station has been making analysis of water and it has been found that in a large percentage of cases the water was wholly unfit for use and in some cases it was pronounced absolutely dangerous. Now we must remember that in most cases where people want water for analysis they had some suspicion that it

sends it 1,500 feet distant, while the cost without digging the trench for the pipe was \$130.

When we have secured a supply of water by any means it will always pay to have it in front of our cattle during the time they are stalled. There are several ways of doing this, but they all require a tank of some kind to hold a supply of water and also to force the water into the drinking basins or troughs. In my own case we built a tank of cement and made it high enough to run water into the drinking troughs, which are wooden, lined with galvanized iron and cost for the lining 12 cents a foot. They are nine inches wide and oval in shape. The troughs are placed above the manger, so that the cattle can reach them, and are filled by taps at the end. The advantage of the troughs is that they are easily cleaned and are very much cheaper than the iron basins. I may say this arrangement has given us perfect satisfaction. A wooden tank could be suspended from the ceiling of the stable, which would give the pressure to fill the troughs, if preferred to a cement tank built up from the floor. The water troughs could also be placed at the back of the manger; but in that case they would have to be covered. The advantage of having the water in front of the cattle is undoubted. I may add in conclusion that it will pay any farmer to make reasonable outlay in order to procure the good and convenient water supply, more so than money expended in any other way.